

REMARKS

Presently pending Claims 7-14, 23-27 and 29 stand rejected as anticipated under the meaning 35 U.S.C. § 102(b) in view of JP '835 (JP 11-060835). Applicants submit that the present claims are both novel and not obvious over JP '835 for reasons including: (1) the JP '835 reference does not disclose or suggest a process in which a polyolefin resin is first molded then crosslinked, and (2) the JP '835 reference fails to disclose or suggest a process in which crosslinking is carried out on an aromatic vinyl block polymer block comprising an alkylstyrene-derived structural unit.

The evidence of record proves that the sequence of crosslinking and molding is critical.

Present Claim 1 is drawn to a molded article that is "obtained by molding a resin composition into a desired shape and **thereafter** exposing the same to an active energy ray to carryout a crosslinking reaction,...". JP '835 discloses no such molded article. At best, JP '835 discloses a resin composition that is first crosslinked then molded to form a molded article.

The resin composition of JP '835 is obtained by crosslinking an aromatic vinyl/hydrogenated diene block copolymer. This is described, for example, in paragraph [0021] of the English translation of JP '835:

When performing crosslinking with electron rays, the irradiation dose is preferably 10 kGray or more because moldability of the resulting propylene resin composition is excellent.

Thus, the propylene resin composition is one that is obtained from crosslinking an aromatic vinyl/hydrogenated diene block copolymer. It is the crosslinked product that is subjected to molding (see paragraph [0036] of JP '835). In the presently claimed invention the crosslinking occurs after the molding.

Nowhere in JP '835 is it disclosed or suggested that a molded article may undergo crosslinking. It is a matter of fact that the JP '835 resin is first subjected to crosslinking to form a resin composition which is subsequently subjected to molding to form a molded article. The Office's assertions to the contrary are unsupportable. Applicants draw the Office's attention to the examples of JP '835 which make it abundantly clear that the propylene resin-containing composition of the JP '835 reference is formed by carrying out crosslinking before or during molding but not after molding.

The Suzuki Declaration filed on January 9, 2008 proves that the sequence of molding and crosslinking recited in the present claims is critical with respect to obtaining a molded article having desirable physical and/or chemical properties. Inventive Example 1 and the Comparative Experiment of the Suzuki Declaration are carried out such that the inventive example includes crosslinking after molding whereas the comparative example includes crosslinking then molding. Table 1 below summarizes the differences in the properties of the inventive and comparative examples of the Suzuki Declaration.

Table 1

	Example 1	Comparative Experiment
(I) Block copolymer		
(I)-1	20	
Electron-beamed, crosslinked production of (I)-1		20
(II) Polyolefin resin		
PE1	80	80
Irganox 1010	0.1	0.1
Electron beam does (kGy)	200	
Hardness (Type D)	31	39
Tensile strength at break (23°C, MPa)	25	20
Elongation at break (23°C, %)	530	450
Residual tensile strength at break (23°C, %) Test condition: 120°C, 96 hr. leaving	104	Melted

	Example 1	Comparative Experiment
Residual elongation at break (23°C, %) Test condition : 120°C, 96 hr. leaving	107	Melted
Tensile strength at break (80°C, MPa)	6.3	5.0
Elongation at break: (80°C, %)	480	450
Heat deformation (%) Test condition: 150°C, 30 min., 1kg load, heating	20	Melted
Deformation temperature (°C)	238	90
Toluene extraction (%)	0	0

The Suzuki Declaration evidences that there are substantial differences in the molded articles of the present claims in comparison to molded articles obtained by crosslinking then molding. These differences are evident in properties such as residual tensile strength at break, residual elongation at break, heat deformation and deformation temperature. In fact, it is not possible to measure properties such as residual tensile strength and residual elongation at break for the molded article of the comparative experiment because the resin sheet of the comparative experiment melts at the temperature conditions under which the tests are carried out (i.e., 120°C and 150°C, respectively). The inventive example does not melt and provides residual tensile strength and residual elongation at break properties of 104 and 107, respectively. Further, substantial differences are noted in deformation temperature where the inventive example has a deformation temperature of 238°C whereas the comparative experiment has a deformation temperature of only 90°C.

Applicants submit that the Suzuki Declaration is probative of the non-obviousness of the presently claimed invention. Applicants carried out a side-by-side comparison of the presently claimed invention with the closest prior art and demonstrated that there are substantially different properties associated with polymer compositions that are first

crosslinked then molded in comparison with the molded article of the present invention which is formed by first molding then crosslinking.

Importantly, the Suzuki Declaration and the examples of the present specification show that the product-by-process limitation regarding the sequence of molding and crosslinking does in fact describe a molded article that is different from that of the closest prior art. If the JP '835 molded article was the same as the molded article of the present claims there would be no differences in physical properties between the two. Applicants factual evidence shows that the presently claimed molded article is different from the molded articles of the cited art.

Applicants thus submit that the JP '835 reference fails to disclose a molded article which is formed by first molding then crosslinking. For at least this reason (and for the further reasons discussed below) the rejection of the present claims as anticipated by JP '835 should be withdrawn.

The Office erroneously disregards Applicants' evidence.

The Office asserts that the Suzuki Declaration is insufficient basis from which to prove the non-obviousness of the claimed invention. In particular the Office asserts that the comparison of crosslinked propylene-based resin compositions before and after molding is not probative of patentability because the closest prior art describes an ethylene-based composition. Applicants submit that the evidence of the Suzuki Declaration is in fact sufficient to prove non-obviousness.

It is not the propylene or the ethylene portions of the block co-polymer that undergo crosslinking to change the properties of the molded article. As expressly recited in the present claims it is the polymer block A (i.e., the addition polymerization block copolymer (I)) which comprises the alkylstyrene-derived structural unit that undergoes crosslinking upon exposure

to an active energy ray, not the polyolefin resin (II). The Office offers no explanation why the difference in the polyolefin resin is in any way relevant to the sequence of crosslinking and molding given that the claim language calls for crosslinking at a different block portion.

On the one hand the Office asserts that the evidence of the Suzuki Declaration is not probative of patentability. On the other hand asserts that JP '835 anticipates the presently claimed invention. Such positions are directly contradictory.

Applicants' comparison eliminates all variables except for the sequence of crosslinking and molding. The Suzuki Declaration thus proves the criticality of the product-by-process limitation of the claims. No further evidence is needed.

Applicants submit the Office's refusal to recognize the probative value of Applicants' data is legal error meriting withdrawal of the rejections.

The Office fails to give other features of the claims patentable weight.

Not only does JP '835 fail to disclose a molded article made by crosslinking after molding, JP '835 fails to disclose a molded article made from a polymer composition that includes a crosslinked aromatic vinyl polymer block containing an alkylstyrene-derived unit. Present Claim 7 recites a polymer block A which "can undergo crosslinking upon exposure to an active energy ray,...". Polymer block A of present Claim 7 is one that contains at least 1% by mass of alkylstyrene-derived structural unit.

Present Claim 8 requires that the alkylstyrene-derived structural unit includes a p-methylstyrene unit. The examples of the present specification demonstrate the effect of the crosslinking in the claimed molded article, e.g., a molded article made from a resin that comprises and alkylstyrene-derived structural unit. Examples 1-6 described molded articles that adhere to the present claim limitations. Tables 1, 3 and 4 of the specification (see pages 34, 36 and 37) show that the inventive sheets are substantially superior in comparison to the

sheets of Comparative Examples 7-12. In contrast to the inventive examples, Comparative Examples 7-12 include a crosslinkable block portion that includes only styrene units and not the alkylstyrene-derived structural unit (a) of the present claims. Applicants disclose the following on page 37-38 of the specification:

The results of Tables 1, 3 and 4 indicate that the molded articles formed of the respective polyolefin-based resin compositions of Examples 1 through 6 are more favorable, especially in terms of their heat resistance and solvent resistance, than the corresponding molded articles of the respective polyolefin-based resin compositions of Comparative Examples 7 through 12, each of which includes a block copolymer having its hard segment formed of blocks composed solely of styrene units.

This is relevant to the JP '835 disclosure at, for example, paragraph [0017] where it is disclosed that monomer units such as styrene and α -methyl styrene are preferred aromatic vinyl compounds. Further still, JP '835 exemplifies compositions that contain styrene not the alkylstyrene-derived structural unit of present Claim 7.

Applicants thus submit that the presently claimed invention is further not obvious over the JP '835 disclosure.

Further still, present Claim 7 describes a particular addition-polymerized block copolymer (I) in combination with a particular polyolefin resin (II) in a mass ratio of 90/10-1/99. The claimed molded article comprising such a composition exhibits desirable properties with respect to flexibility, heat resistance, dynamic property and solvent resistance.

Applicants thus further submit that the rejection should be withdrawn.

For the reasons discussed above in detail, Applicants respectfully request withdrawal of the rejections and the allowance of all now-pending claims.

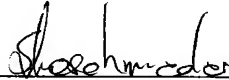
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